

SIP Service Quality Reports

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Introduction

- **Main goal: provide a SIP-based mechanism to report RTP media session quality.**
- **Why SIP?**
 - **Convenience -- presumably, the device or application and its proxy servers already support SIP.**
 - **Completeness – most other VoIP signaling protocols already support a similar capability.**
 - **Enables Application Server to make use of reports**
 - **e.g. service level management, bandwidth management, policy management**
 - **SIP has redirection, forking, and forwarding built-in the protocol**
 - **Useful where multiple servers or applications are interested in the information.**

Draft Scope

- **Focuses on RTP-based voice, but allows extension to other media types.**
 - **Video, Fax, and Voiceband Data could easily work with simple extensions**
- **Metrics defined in events based on RTCP, RTCP XR and other standard measurements**
 - **Also incorporates higher resolution version of RTCP XR**
 - **Any measurement algorithm can be used: ITU-T E-model, PESQ, or proprietary**
- **Also can be extended to allow new and vendor specific metrics.**

VQ-RTCP-XR Event

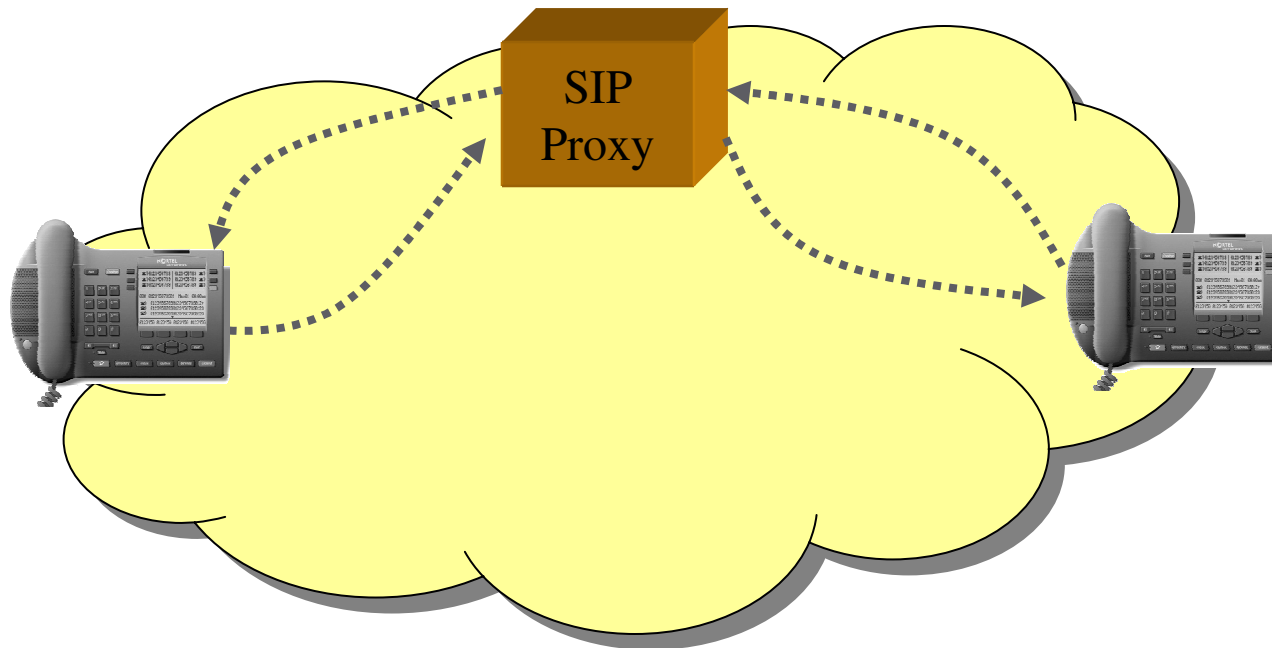
- **Allows use by SUBSCRIBE/NOTIFY or PUBLISH**
- **Event syntax is textual, following SIP conventions.**
 - **Why not XML?**
 - **Event could be large – risk of segmentation**
 - **Alignment with other report format definitions (e.g. MGCP).**
- **Explicit formats for threshold violation reports, end-of-session reports, and periodic reports.**
- **Both participants' view can be captured: remote, local**
- **Configuration of reporting characteristics is out of scope for draft; things that will likely need to be configured:**
 - **Report types – preference of application server/proxy/collector**
 - **Threshold values, threshold metric(s)**
- **Configuration could be handled by use of profile configuration framework.**

Threshold Violation / Alerting Example

Threshold Violation Example, 1

Step 1) Session Establishment

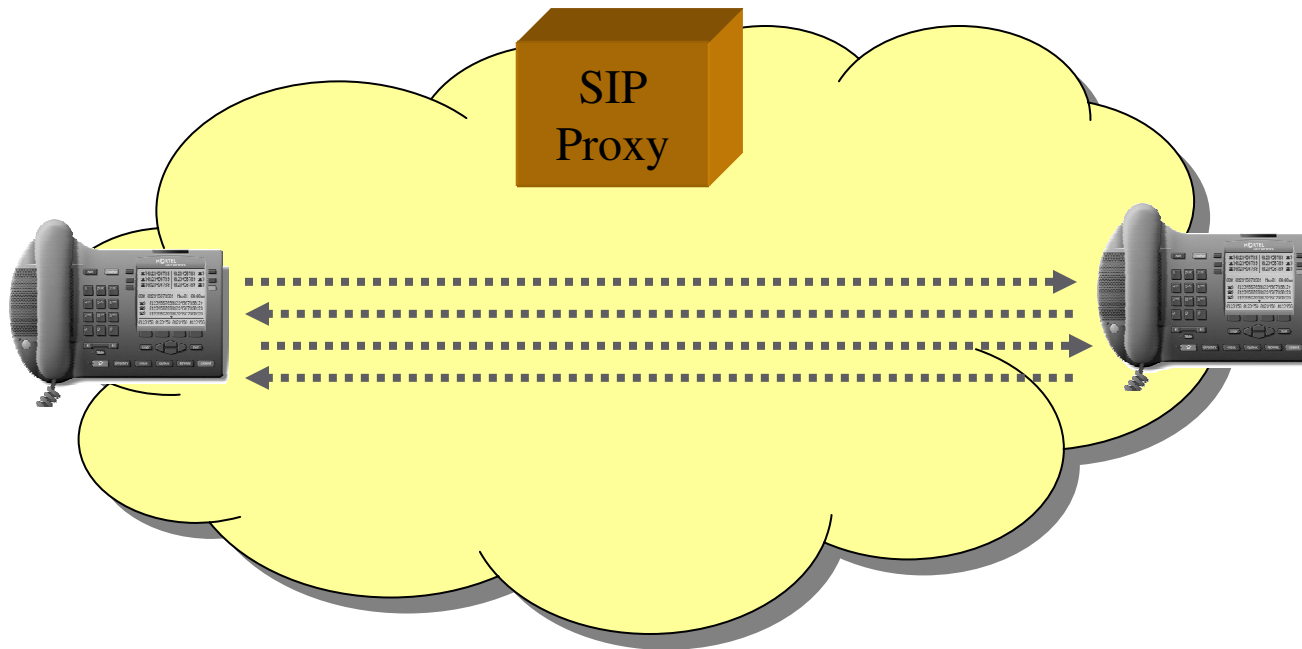
- SIP INVITE dialog established through proxy between two User Agent's
- Proxy SUBSCRIBE'd to receive vq-rtcp-xr events from both User Agents



Threshold Violation Example, 2

Step 2) RTP, RTCP, and RTCP XR reporting

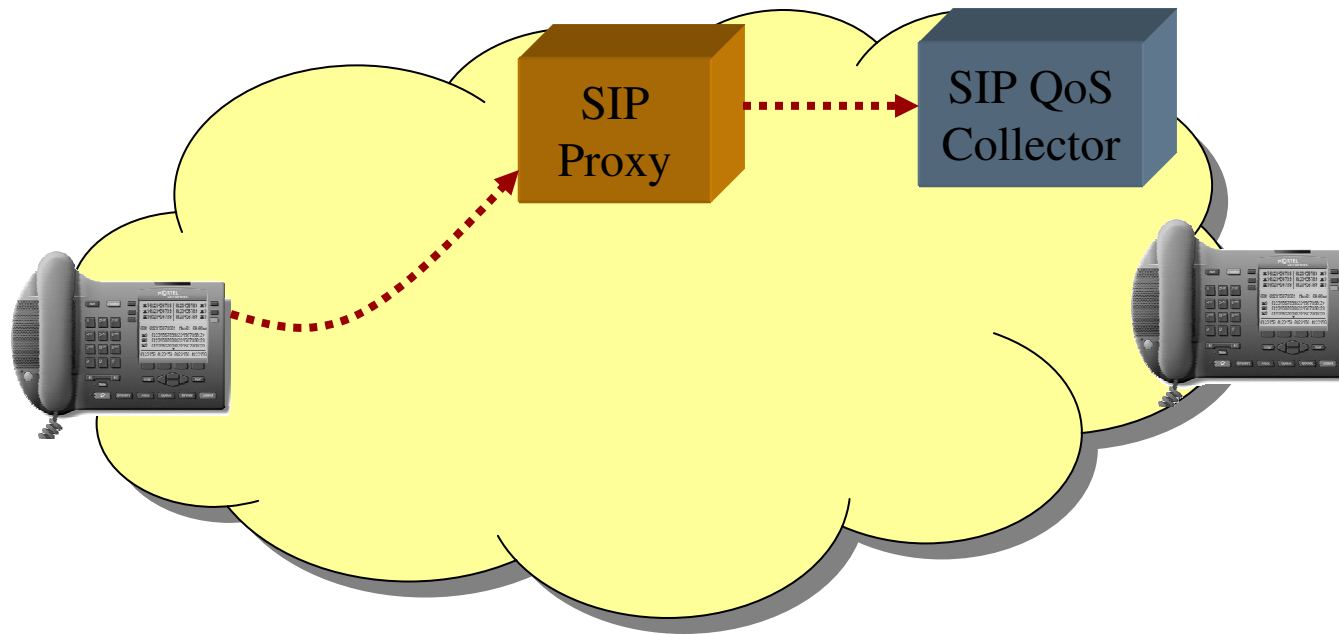
- User Agents exchange media (RTP)
- User Agents exchange RTCP (~ every 5s)
- User Agents exchange RTCP XR (~every 10s)



Threshold Violation Example, 3

Step 3) Violation detected

- User Agent 1 determines voice quality has dipped beneath an acceptable level, based on Listening R.
- User Agent 1 sends NOTIFY to SIP Proxy
- From here, the SIP Proxy can take action itself and/or send the message to other interested parties, or transform into an SNMP Alert for an NMS.



Threshold Violation NOTIFY Event Format Example

NOTIFY sip:proxy@nmrg.example.com SIP/2.0
Via: SIP/2.0/UDP pc22.nmrg.example.com;branch=z9hG4bK3343d7
Max-Forwards: 70
To: <sip:proxy@nmrg.example.com>
From: UserAgent1 <sip:ual@nmrg.example.com>;tag=a3343df32
Call-ID: 1890463548@ual@nmrg.example.com
CSeq: 4321 NOTIFY
Event: vq-rtcpxr
Content-Type: application/vq-rtcpxr
Content-Length: ...

VQAlertReport: Type:RLQ Severity:Warning Dir:local

Metrics:

TimeStamps=START:10012004.19.01.04 STOP:10012004.19.01.52
SessionDesc=PT:0 PD:G.711 SR:8000 FD:20 FPP:2 PLC:3 SSUP:on
CallID=1890463548@alice.chicago.com
LocalAddr=IP:10.10.1.100 PORT: 5000 SSRC:fjuekdn393k
RemoteAddr=IP:11.1.1.150 PORT:5002 SSRC:r3k3k99weid
JitterBuffer=JBA:3 JBR:2 JBN:40 JBM:80 JBA:120
PacketLoss=NLR:5.0 JDR:2.0
BurstGapLoss=BLD:0 BD:0 GLD:2.0 GD:500
Delay=RTD:200 ESD:140 IAJ:2
Signal=SL:2 NL:10 RERL:14
QualityEst=RLQ:90 RCQ:85 EXTRI:90 MOSLQ:3.4 MOSCQ:3.3 QoEEstAlg:G.107
DialogID:38419823470834;to-tag=8472761;from-tag=9123dh3111